

SHORT COMMUNICATION

On the genus *Neostothis* Vellard (Araneae, Nemesiidae)

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Abstract. To date, the genus *Neostothis* Vellard is known only from its type species *Neostothis gigas* Vellard 1925, described on the basis of a single male and some females from Reserva Biológica do Alto da Serra de Paranapiacaba, Santo André, São Paulo, Brazil. The type specimens, which should be deposited in the collection of the Instituto Butantan are lost. Specimens matching the description of *N. gigas*, collected in the type locality, allowed us to designate a neotype and provide more information on the genus and species.

Resumo. Até a presente data, o gênero *Neostothis* Vellard é conhecido somente pela espécie tipo *Neostothis gigas* Vellard 1925, descrita com base em um macho e algumas fêmeas da Reserva Biológica do Alto da Serra de Paranapiacaba, Santo André, São Paulo, Brasil. Os exemplares-tipo, que deveriam estar depositados na coleção do Instituto Butantan, estão perdidos. Exemplares machos e fêmeas de *N. gigas*, coletados na localidade-tipo, permitiram estabelecer um neótipo e melhorar o conhecimento do gênero e da espécie.

Keywords: Atlantic Forest, Mygalomorphae, *Neostothis gigas*, Pycnothelinae

The family Nemesiidae was proposed in 1985 by Raven by elevating Simon's Nemesiidae Simon 1892, synonymizing Pycnothelidae with it, and transferring to it some genera previously placed in Ctenizidae (Raven 1985). To date, the family includes six subfamilies, 41 genera, and 340 species distributed worldwide (Platnick 2008).

Two subfamilies include genera with species known to occur in Brazil: Pycnothelinae, with *Chaco* Tullgren, *Hermachura* Mello-Leitão, *Neostothis* Vellard, *Prorachias* Mello-Leitão, *Psalistopoides* Mello-Leitão, *Psellignus* Simon, *Pycnothele* Chamberlin, *Rachias* Simon and *Stenoterommata* Holmberg; and Anaminae, with *Acanthogonatus* Karsch, *Longistylus* Indicatti & Lucas and *Hermacha* Simon (Raven 1985; Platnick 2008).

The monotypic genus *Neostothis* was proposed by Vellard (1925), to include the type species, *N. gigas*, described based on a male and females from Reserva Biológica do Alto da Serra de Paranapiacaba, Santo André, São Paulo, Brazil. Vellard originally placed the genus in Barychelidae, probably due to the wide labium with few cuspules, absence of tibial apophysis, short apical segment of the posterior lateral spinnerets and well developed leg scopulae, mainly on tarsi I and II, resembling claw tufts. Raven (1985), based on Vellard's description, considered *Neostothis* a junior synonym of *Chaco* Tullgren, and transferred the genus from Barychelidae to Nemesiidae (Pycnothelinae), due to the presence of scopula on tarsi III and IV, wide labium, and absence of third claw. Goloboff (1995) reestablished *Neostothis* based on characters previously mentioned by Vellard: lack of keels on the male palpal bulb and absence of tibial apophysis.

During field work in the type locality, several male and female specimens of *N. gigas* were collected. These specimens yield a better knowledge about the genus and species and enabled the establishment of a neotype.

METHODS

The material examined is deposited in the following institutions (abbreviation and curator in parenthesis): Instituto Butantan, São Paulo (IBSP, A.D. Brescovit), Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP, R. Pinto da Rocha) and American

Museum of Natural History, New York (AMNH, N.I. Platnick). Spine notation follows Petrunkevitch (1925). All measurements are in millimeters and were taken with an ocular lens. The length of leg segments was measured between joints in dorsal view. Length and width of carapace, eye tubercle, labium and sternum are maximum values obtained. The total body length excludes chelicerae, pedicel and spinnerets. All drawings were made with a drawing tube (Leica MZ 12.5). Spermathecae were cleared with clove oil and illustrated in ventral and dorsal view. Abbreviations: AME, anterior median eyes; ALE, anterior lateral eyes; PME, posterior median eyes; PLE, posterior lateral eyes; PLS, posterior lateral spinnerets; d, dorsal; v, ventral; p, prolateral; r, retrolateral; ap, apical.

TAXONOMY

Neostothis Vellard 1925

Neostothis Vellard 1925:79, 82, pl.15. Type species by monotypy, *Neostothis gigas* Vellard 1925. Raven 1985:103; Goloboff 1995:168; Platnick 2008.

Diagnosis.—Males of *Neostothis* (Figs. 2 a–c) resemble those of *Prorachias* Mello-Leitão by the absence of keels on the embolus (Lucas et al. 2005, figs. 1–3), but can be distinguished by the weak rastellum; intercheliceral tumescence large, pale yellow and covered with many modified setae; shape of the palpal tibia (Figs. 2 a, c); and absence of a third claw on all tarsi. Females resemble those of *Pycnothele* Chamberlin by the presence of a supraspermathecal chamber (Goloboff 1995, fig. 115 g, h) (Figs. 2 e, f). They differ by the chamber less sclerotized on lateral sides and located more centrally (Figs. 2 e, f), by the spermathecal lobe three or four times larger than in *Pycnothele*, and by the scopula of tarsi III entire.

Description.—See species description.

Distribution.—Known only from the state of São Paulo, southeastern Brazil.

Neostothis gigas Vellard 1925
(Figs. 1 a–d, 2 a–f)

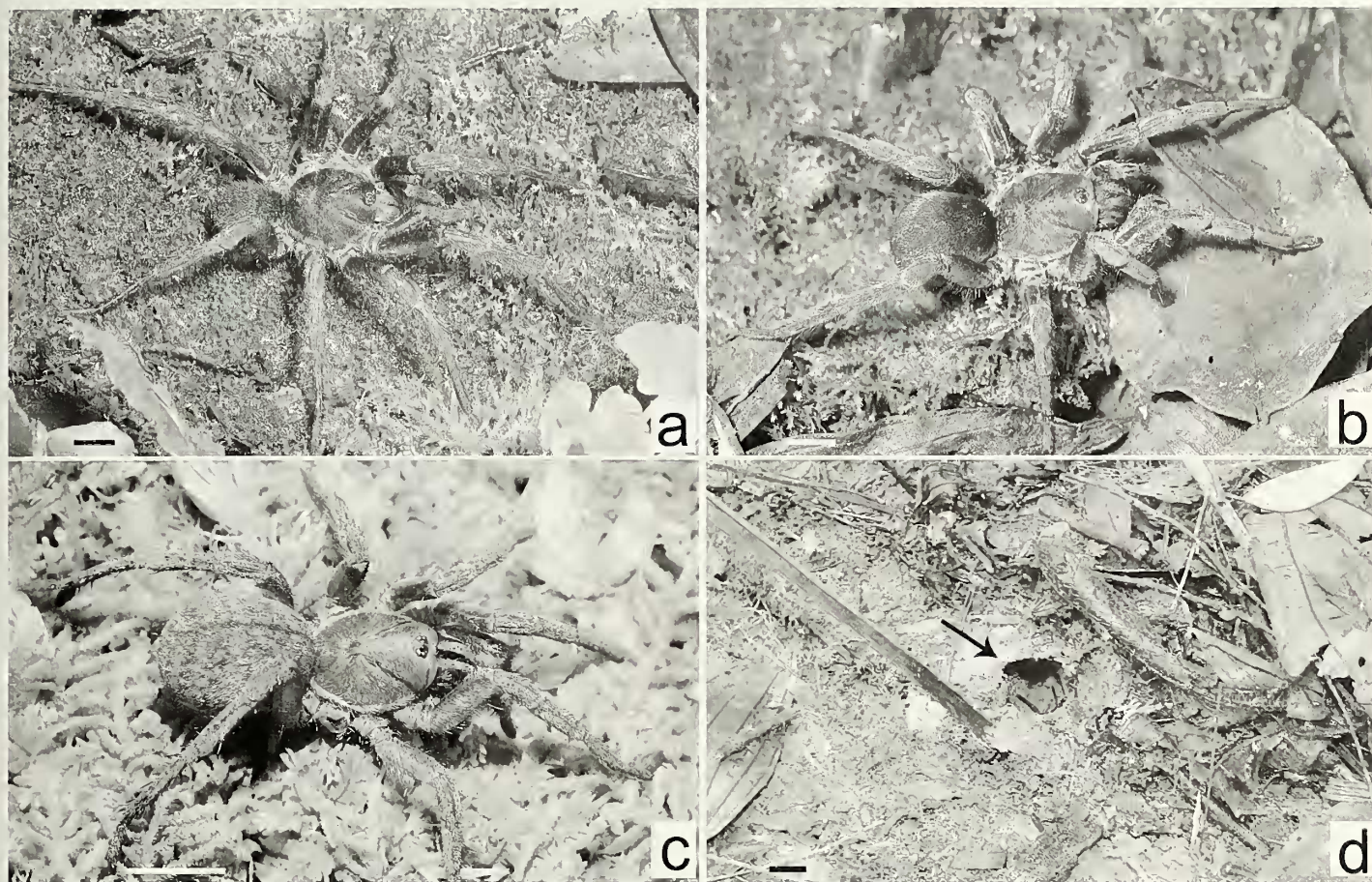


Figure 1.—*Neostothis gigas*. a–c. Body, dorsal view: a. Male; b. Female; c. Juvenile; d. Burrow, frontal view. Scale bars: a–c = 5 mm; d = 20 mm. Photos: a–c. F.U. Yamamoto; d. R.P. Indicatti.

Neostothis gigas Vellard 1925:79, 82, pl. 15 (male holotype from Reserva Biológica do Alto da Serra de Paranapiacaba [23°46'00"–23°47'10"S; 46°18'20"–46°20'40"W], Santo André, São Paulo, Brazil, deposited in IBSP 104, lost, neotype here designated IBSP 13509; Raven 1985:103; Goloboff 1995:168; Platnick 2008.

Other material examined.—BRAZIL: *São Paulo*: Santo André (Reserva Biológica do Alto da Serra de Paranapiacaba [23°46'00"–23°47'10"S; 46°18'20"–46°20'40"W]), 24 males, 18–19.XII.2006, M. Uehara-Prado leg. (IBSP 13493–13495; 13497; 13498–13500; 13506; 13508; 13510; 13512; 13513; 13517; 13518); 5 males, 11–12.I.2007 (IBSP 13509; 13516; 13501; 13504; 13505; 13521); 2 males, 12.I.2006 (IBSP 13496; 13502); 8 males and 3 females, 16–17.XI.2006 (IBSP 13519; 13515; 13503; 13511; 13514; 13507; 145499; 14500); 1 female, 17.VIII.1997, I. Grantsau leg. (IBSP 8290); 1 female, 17.III.1998, C. Albuquerque leg. (IBSP 10590); 2 females, 13.XII.2003, R.P. Indicatti leg. (IBSP 13229, 14371); Ribeirão Pires [23°43'S; 46°25'W], 1 male, 27.IX.2004, O.R. Silva leg. (AMNH); São Lourenço da Serra [23°52'S; 46°57'W], 1 female, 16.XII.2003, R.P. Camargo leg. (IBSP 10382); 1 male, X.2005, R. Krett de Oliveira leg. (IBSP 12266); Ubatuba (Parque Estadual Ilha Anchieta [23°32'S; 45°03'W]), 1 female, 23–30.VII.2001, C.A. Rheims, D.F. Candiani, C.A.R. Souza and A.G. Suguimoto leg. (IBSP 12371); São Sebastião [23°48'S; 45°25'W] (Barra do Una), 1 male, 29.I.1997, B.A. Mattos-Netto leg. (IBSP 8214); 1 male (IBSP 14364); (Barra do Sahy), 1 male, 21.II.1994, V. Durion leg. (IBSP 8213); 1 male, 31.I.2006, E.F. Santos leg. (IBSP 8216); 1 male, I.1986, E. Cibelle leg. (IBSP 4585); (Juqueí), 1 male, XI.1976, G. Peixoto leg. (IBSP 14363); 1 male, I.2007 (IBSP 13660); Mogi das Cruzes [23°31'S; 46°10'W], 3 males, 21–23.IX.2004, A.E.G. Monteiro leg. (MZSP 27653; 27654); (Parque

das Neblinas), 4 males and 2 females, 03.I.2006, M. Uehara-Prado leg. (IBSP 13264; 13262; 13261; 13263); 1 female, 20.III.2006 (IBSP 13265); Salesópolis (Estação Biológica de Boracéia [23°32'S; 45°51'W]), 5 males and 1 female, 08–10.XII.2005, M. Uehara-Prado leg. (IBSP 13271; 13272; 13273; 13274; 13275; 13266); 1 female, 13–17.III.2007, F.U. Yamamoto leg. (IBSP 13458); 01–08.XI.2006, R. Recoder leg. (IBSP 14291; 14292; 14293); 2 males, 08.IV.2005 (IBSP 13268); 2 males, 09–10.IX.2005 (IBSP 13269; 13270); 2 females, (22160); VI.2003, J.P.L. Guadanucci leg. (MZSP 27673); Juquitiba [23°55'S; 47°4'W], 1 female, IX.1979, O. Martinez leg. (IBSP 4479); 1 female, XI.1979, P.G. Butazzi (AMNH); (Juquiazinho), 1 male (IBSP 14501); Ilha Bela (Parque Estadual de Ilha Bela [23°8'–23°50'S; 45°18'–45°22'W]), 3 males and 5 females, 16.I.1998 (IBSP 13103; 13104; 13105; 13106; 13107; 13108; 13109; 13110); Itanhaém [24°10'S; 46°46'W], 1 male, V.1985, R. Pinheiro leg. (IBSP 4585); São Paulo [23°31'S; 46°37'W], 1 male, 13.XI.1991, R.C. Rossger leg. (IBSP 14290); (Parque Estadual do Jaraguá), 1 male, 23.X.2001, R.P. Indicatti leg. (IBSP 3825); 1 male, 13.X.1997, M. Tokura leg. (IBSP 8217); (Guarapiranga), 1 male, 24.XI.2003, V.R. Santos leg. (IBSP 10626); (Parelheiros), 1 male, XII.1975, R. Schwarcz leg. (IBSP 4173); (Parque Estadual da Serra do Mar, Núcleo Curucutu [23°59'S; 46°44'W]), 1 male, 24.V.2006, M. Forlan leg. (IBSP 13883); Vargem Grande do Sul [21°49'S; 46°52'W], 1 female, 10.X.1980, T. Siola leg. (IBSP 4569).

Diagnosis.—See genus diagnosis.

Description.—*Male* (neotype IBSP 13509). Coloration pattern: carapace, abdomen and legs dark brown (Fig. 1 a). Total length 22.0, Carapace 10.75 long, 12.5 wide, fovea short and procurved. Clypeus narrow 0.87. Anterior eye row procurved, posterior slightly recurved. AME 0.41, ALE 0.47, PME 0.25 and PLE 0.46. Overall shape of eye

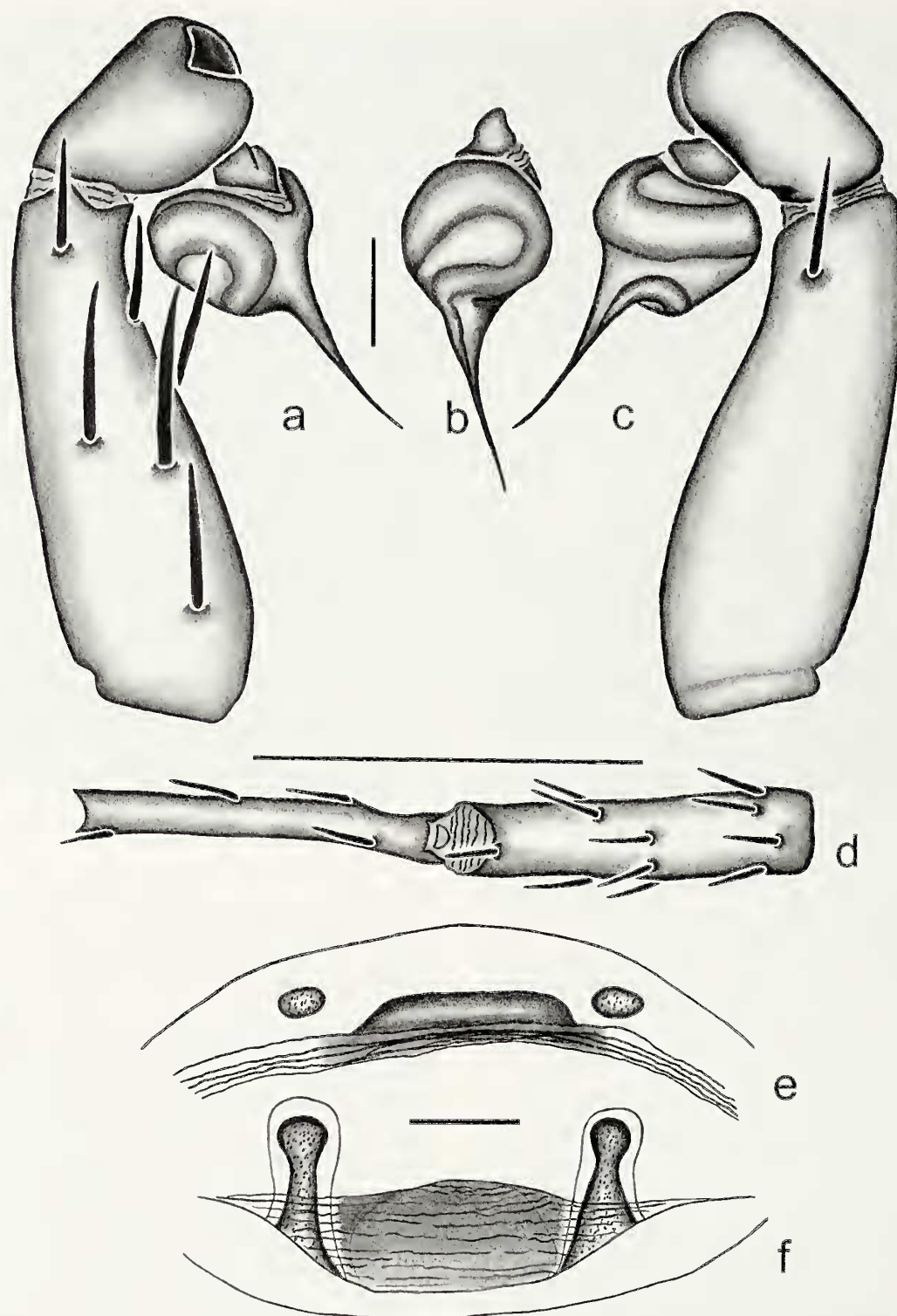


Figure 2.—*Neostothius gigas*. a–c. Left palpal bulb: a. Prolateral view; b. Ventral view; c. Retrolateral view. d. Male, left leg, tibia and metatarsi I, ventral view. e, f. Female supraspermathecal chamber: e. Frontal view; f. Dorsal view. Scale bars = 1 mm.

group trapezoidal, wider than long. Basal segment of chelicerae with 10–11 promargin teeth in a row and rastellum with very strong setae. Intercheliceral tumescence pale yellow, large, covered with many dark modified setae. Labium 1.75 long, 1.0 wide, with three cuspules. Each endite with 30 cuspules. Serrula present. Sternum oval 4.75 long, 5.62 wide. Six sternal sigilla, posterior submarginal three times size of anterior. Leg measurements: **I**: femur 11.0/ patella 6.25/ tibia 8.75/ metatarsus 9.75/ tarsus 5.25/ total 41.0; **II**: 10.62/ 5.75/ 8.37/ 9.62/ 5.5/

39.86; **III**: 10.0/ 5.0/ 7.25/ 11.25/ 5.37/ 38.87; **IV**: 12.25/ 5.62/ 9.75/ 14.5/ 5.25/ 47.37; spination: **palp**: femur d0-0-0-0-0-2-0, patella p0-1-1-0-1-0, tibia v0-0-1p-0, p0-1-0-2-0-1-1, r0-0-0-0-0-1; **legs**: **I**: femur d0-1-1r-1-2-1-2-1-2-0, patella p0-0-1-0-1-0, tibia v1p-2r-0-1-2r-1p (ap), p2-0-1-1-1-0-0, megaspine absent, metatarsus v0-1p-1r-0-1r-0-0-0, p1-0-0-1-0-0-1, r0-0-1-0; **II**: femur d0-1-2-1-2-1-2-1-2, patella v0-1r-0, p0-0-1-1-0, tibia v1p-2r-0-0-1p-1-1r-0-0-3ap, p1-1-0-1-0-1-1-0-0, metatarsus d0-0-0-1-0-0, v0-1p-1r-0-0-1r-1p-0-0-2ap, p1-0-0-1-0-0-0-1, r0-0-0-0-1-

0-0-1; **III**: femur d0-1-2-1-2-1-2, patella p0-1-1-1-0, r0-1-0-0, tibia d0-1-1-0-0-1-0-0, v2r-2p-0-0-1p-1r-0-0-3ap, p1-1-1-0, r1-0-1-0-1-0, metatarsus d2r-1p-1-1r-1p-1r-1p-0-2, v0-1p-1r-0-0-1p-1r-1p-0-3ap, p0-1-0-1-0-1-0-1, r1-0-1-0-1-1-0-0; **IV**: femur d0-1-1-2-1-2-1-2, patella p0-1-1-1-0, r0-1-0-0, tibia d0-1r-1-0-0-0-1-0, v1r-1p-0-0-1p-1r-0-0-3ap, p1-0-1-0-1-0, r1-0-1-0-1-0-1-0-1, metatarsus d0-2r-2-1p-1r-0-1p-1r-0-2, v1r-1-1p-0-1p-1p-1r-0-3ap, p0-1-0-0-1-0-1-0, r0-0-1-0-0-1-0-1-0. Metatarsi I with a slight retrolateral basal curvature (Fig. 2 d). Tarsi I–IV flexible. Scopulae divided on tarsi I–V (more dense and projected anteriorly on tarsi I–II, resembling claw tufts) and on anterior fourth of metatarsi I–II. Superior tarsal claws large with two rows of 5–8 teeth on tarsi I; 5–9 on tarsi II, 5–10 on tarsi III and 5–11 on tarsi IV. Third claw absent on all tarsi. Four spinnerets, PLS three segmented, basal segment 1.25, median segment 0.75, apical segment, domed 0.37 long. Palpal tibia short and basally dilated. Bulb piriform with long and slender embolus, slightly curved dorsally (Figs. 2 a–c).

Female. (IBSP 8290). Coloration pattern as in male (Fig. 1 b). Total length 24.37. Carapace 13.12 long, 11.25 wide, fovea short and procurved. Clypeus narrow 1.25. Anterior eye row procurved, posterior slightly recurved. AME 0.42, ALE 0.47, PME 0.25, PLE 0.45. Overall shape of eye group trapezoidal, wider than long. Basal segment of chelicerae with 11 promargin teeth in a row and rastellum with very strong setae. Intercheliceral tumescence absent. Labium 1.37 long, 2.12 wide, with four cusps. Each endite with 28 cusps. Serrula absent. Sternum oval 6.62 long, 5.87 wide. Six sternal sigilla, posterior and median submarginal, posterior three times size of anterior. Leg measurements: **I**: femur 10.0/ patella 6.25/ tibia 6.62/ metatarsus 6.5/ tarsus 3.62/ total 32.99; **II**: 9.37/ 5.62/ 6.0/ 6.25/ 3.75/ 30.99; **III**: 8.37/ 5.0/ 5.25/ 7.25/ 3.5/ 29.37; **IV**: 11.25/ 5.5/ 7.5/ 12.12/ 3.75/ 40.12; spination: **palp**: femur d0-0-0-0-1p, tibia v2-0-2-0-4ap, p0-0-1-0, tarsus v1r-0-0-0-0; **legs**: **I**: femur d0-0-0-0-0-1p-0, tibia v0-1-0-0-1p-1-0-0-1p (ap), p0-0-1-0, metatarsus v1p-1r-0-0-1r-0-0-0-0; **II**: femur d0-0-0-0-0-1p-0, patella d0-0-0-1p-0, tibia v1p-1r-0-0-2-1r-0-0-3ap, p0-1-0-1-0, metatarsus v0-1p-1r-0-0-1r-0-0-2ap, p0-0-1-0-0-0; **III**: femur d0-0-0-0-1r-0, patella p0-0-1-1-0, tibia v0-1r-1p-0-0-2-0-0-0-2ap, p0-1-0-1-0, r0-1-0-0, metatarsus d0-0-2-0-0-0-2-0, v0-0-1p-2r-1p-0-0-1r-1p-3ap, p0-0-1-0-0-0-1-1-0, r0-0-1-0-0-1-0-0-2-0-0-3ap; **IV**: patella p0-0-1-1-1-0, tibia v1r-1p-0-0, r0-1-0-1-0, metatarsus d0-0-0-1r-1p1-0-0, v0-1p-1r-0-1p-2-0-2-0-1r-1p-0-3ap, p0-1-0-0-1-0-0-1-1-1-0, r0-1-0-1-0-1. Tarsi I–IV flexible. Scopulae present on tarsi I–IV and on metatarsi I–II. Scopulae on tarsi and metatarsi I–II more dense and projected on lateral sides. Scopulae on tarsi I–II projected anteriorly (resembling claw tufts). Scopulae on tarsi I–II and metatarsi I symmetric and metatarsi II asymmetric. Scopula of tarsi IV divided by one band of 4–8 setae. Superior tarsal claws large with two rows of 5–6 teeth on tarsi I, 5–6 on tarsi II, 5–7 on tarsi III and 6–9 on tarsi IV. Third claw absent on all tarsi. Four spinnerets, PLS three segmented, basal segment 1.87, median segment 0.87, apical segment domed 0.62 long. Spermathecae formed by two receptacles with a wide base and dilated apical region (Figs. 2 e, f).

Note.—Coloration pattern in juvenile: carapace brown with golden setae on lateral sides and legs brown with golden-yellow setae and dark brown mottles. Abdomen dorsally and ventrally brown with random symmetric pale mottles in life (Fig. 1 c).

Variation.—Males ($n = 20$): total length 19.6–24.7; carapace 10.6–13.7; endites with 25–58 cusps. Females ($n = 10$): total length 22.7–28.4; carapace 10.1–13.3; endites with 40–68 cusps. Posterior and median sternal sigilla can be marginal.

Natural history.—This species occurs in Atlantic Forest areas, 0–900 m elev., mainly in the littoral of the state of São Paulo. Adult specimens can be found in burrows of simple vertical or horizontal tunnels with 2.0–3.5 cm diameter and 10–20 cm length in ravines, from as low as ground level to as high as 1 m. The inside of the burrow is covered by a thin layer of silk. The opening is protected during the day by a thin layer of silk, which the spider breaks through in the beginning of the night, when it ambushes its prey. In captivity, they usually close the burrow opening with a layer of silk and earth.

Distribution.—Known only from the state of São Paulo, southeastern Brazil.

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LITERATURE CITED

- Goloboff, P.A. 1995. A revision of the South American spiders of the family Nemesiidae (Araneae, Mygalomorphae). Part I: species from Peru, Chile, Argentina, and Uruguay. *Bulletin of the American Museum of Natural History* 224:1–189.
- Lucas, S.M., R.P. Indicatti & C.Y. Fukami. 2005. Redescritção de *Prorachias bristowei* Mello-Leitão, 1924 (Araneae, Mygalomorphae, Nemesiidae). *Biota Neotropica* 5(1a):1–6.
- Petrunkévitch, A. 1925. Arachnida from Panamá. *Transactions of the Connecticut Academy of Arts and Sciences* 27:51–248.
- Platnick, N.I. 2008. The World Spider Catalog, Version 8.5. American Museum of Natural History, New York. Online at <http://research.amnh.org/entomology/spiders/catalog/index.html> (31/III/2008).
- Raven, R.J. 1985. The spider infraorder Mygalomorphae (Araneae): cladistics and systematics. *Bulletin of the American Museum of Natural History* 182:1–180.
- Vellard, J. 1925. Um novo gênero e duas espécies novas de aranha do estado de São Paulo. *Memórias do Instituto Butantan* 2:78–84.

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